February 9, 2006

Mr. Chip Humphrey and
Mr. Eric Blischke
U.S. EPA Region 10
Oregon Operations Office
811 S.W. 6th Avenue
Portland, Oregon 97204

Dear Chip and Eric:

The attached document sets forth the Lower Willamette Group's unresolved technical questions on EPA's letter of December 2, 2005 regarding Identification of Round 3 Data Gaps for the Portland Harbor RI/FS. The questions integrate many of those raised at the meeting in Centralia on December 13, 2005, along with additional follow-up questions developed by the LWG based on our ongoing review of your December 2 letter. We are providing these questions to facilitate scoping of Round 3 data collection efforts. The questions provided in the attachment are organized under numbered headings and sub-headings that correspond to those presented in the December 2, 2005 letter.

Beyond the clarifying questions raised in the attachment, it is clear from the December 2 data gaps document that there are substantial issues on which agreement has not been reached between EPA and the LWG. One theme the LWG would like to address is how each of the data or analysis requests improves the ability of RI/FS to support risk management questions at the site. Expenditure of time and resources to collect additional data will only be useful if it significantly improves the ability to make decisions about cleanup. These will need to be taken up in an expedited manner after the LWG receives EPA's Round 3 scoping document on February 17 to clarify and, to the extent possible, reach agreement on the next steps at the site.

Please feel free to contact either of us if you would like to discuss this submittal.

Very truly yours,
The Lower Willamette Group

Bob Wyatt
Co-Chair

Jim McKenna
Co-Chair

FOLLOW-UP QUESTIONS
IDENTIFICATION OF ROUND 3 DATA GAPS

2. Conceptual Site Model

2.1 Contaminant Loading and Movement

1. What are the agencies' specific expectations for describing upland sources of contamination and transport pathways to the river in the CSM, i.e., what types of information and level of detail (e.g., qualitative vs. quantitative) are required?

2. What is the schedule for JSCS implementation to obtain the information needed to incorporate contaminant loading estimates from upland sources into the CSM?

2.2 Upstream Conditions

1. Regarding background, boundary, and recontamination issues, does EPA envision an upstream boundary with background levels defined upstream of the boundary?

2. Is the primary concern associated with characterizing potential upstream sources? Or assessing the contaminant loadings to the site from upstream regardless of their origin? How is the JSCS being implemented upstream of the ISA? Of the Study Area?

3. What is the rationale for additional tissue collection upstream of RM11, since it is not anticipated that cleanup levels will be calculated for fish tissue? Is the purpose to understand background levels in fish tissue or some other purpose? How will background be understood without knowing where the upstream boundary is?

4. On a location-by-location basis, please explain what has occurred since the approval of the original RI/FS workplan to render "Zidell and Schnitzer, South Waterfront/Lincoln Steam Plant, PGE Substation L, municipal and private outfalls, the historic Portland MGP, Tanner Creek and the historic Pearl District, and Cargill" "key potential sources" requiring "data for source identification" as stated in section 2.2.2 of EPA's letter?

2.3 Downstream Conditions

1. How is the JSCS being implemented downstream of the ISA? Of the Study Area?

3. Areas of Potential Concern

1. Please provide more detail on the screening criteria used for the development of AOPCs; how were these other criteria used, and how were the boundaries of the AOPCs developed?

3.1. Nature and Extent of Contamination

1. How do the agencies anticipate using data for new COIs? What are the implications of adding new analytes to the RI/FS and risk assessments at this point, both from a technical standpoint and in terms of the schedule?

2. What approach will be followed to fill COI data gaps, especially new COIs?

3. Will collecting additional data for new analytes (e.g., PBDEs) cause us to call existing data into question or lead to further tissue collection efforts?

4. What are the details regarding the delineation of riverbank soils and riparian soils? Can EPA provide the LWG with the vertical elevations (in NAVD88 or CRD) it is using to define the OWHM and MHWM throughout the study area? Has EPA mapped the OHWM-MHWM zone?

5. Where does riparian soil and plant tissue fit into Nature and Extent and Risk Assessment?

6. Table 5 of the memo presents surface and subsurface data needs, but the memo text says that there is a need to know the level of certainty and cleanup goals to design sampling plans. Can nature and extent data gaps be filled before COPCs and PRGs are identified? When will the acceptable uncertainty level for the project be defined?

7. For transition zone water, Section 3.1.5 states, "In order to properly assess the risk and contaminant loading, location specific tissue samples or *in-situ* toxicity (e.g., Hyalella) and/or bioaccumulation tests (e.g., *Lumbriculus*) may be required to assess the risk of accumulation and toxicity associated with contaminated groundwater discharges." What kinds of bioaccumulation tests – laboratory or in-situ – are envisioned? How would an *in-situ Lumbriculus* test be performed?

3.2 Contaminant Source Areas and Migration Pathways

1. How will the upland source area information to be collected by DEQ and upland parties under the JSCS program feed into the RI/FS, in particular the CSM and fate and transport evaluations in-river?

2. Would loadings from upland source areas be measured over a range of flow regimes by parties directed by DEQ?

4. Ecological Risk Assessment

4.1 Management Goal and Objectives

1. Does "deleterious effects" mean something more than growth, survival or reproduction?

2. Reducing potential for "exposure" seems different than reducing "risk". Could the language of the management goal be revised to focus on "unacceptable risk" rather than "exposure"?

3. Are the management goals and objectives designed to address CERCLA issues, or do they reach beyond CERCLA into other programs, e.g., to NRD or watershed assessments?

4.2 Conceptual Site Model

1. What compelling new information requires the addition of adult Chinook, adult lamprey and terrestrial plants as receptors? These receptors had been considered previously and not included as receptors due to difficulties associated with quantifying the effects due to exposure within the site.)

4.3 Measures of Exposure and Effect (Tables 6 and 7)

1. Is there a shift in thinking toward assessing risks to individuals (including non-listed species), rather than to populations?

2. Why is EPA now not comfortable with estimating population risk through compositing for the risk assessments?

3. If the primary goal of additional fish tissue sampling is to look at individuals (instead of composites), why is more sculpin data requested (since these will need to be composited to achieve analytical goals)? We assume that such data are needed to either get better spatial resolution of biological information or better assess variability among individual fish. Are there specific chemicals and areas from which EPA believes these data are most needed? (If so, where?) How

will the additional information improve the ability to make risk management decisions?

4. Further rationale and clarification is needed regarding the use of TBT threshold values (See Table 6). The relevance of the Meador (2000) sediment threshold for mollusks is unclear. Further discussion of the applicability of the threshold value for assessing risk is needed.

5. How will osprey eggs be used to validate the Food Web (FW) model (Table 7)? The FW model does not include birds or bird eggs. Any extrapolation from fish tissue to osprey would involve a calculation outside the FW model.

6. What will be the specific use of additional water temperature and total suspended solids data for the FW model? Are the data collected by ODEQ 1995-2005 on these parameters considered inadequate?

7. What is the intended data use of additional tissue chemistry data with regard to temporal changes? Is assessing temporal variability or trends a goal of the analysis?

8. What compelling new information supports the addition of new exposure pathways (e.g., exposure to riparian soils) and lines of evidence (e.g., in-situ testing of invertebrates at groundwater seeps)?

9. What is the process for resolving the "may be needed" part of the data needs table?

4.5 Risk Assessment Approach

1. How will the additional lines of evidence (LOEs) and new data requirements set forth in the memo significantly increase the ability to evaluate ecological risk and support decision making?

2. How will EPA determine the acceptable level of uncertainty in the various ERA elements that is acceptable for supporting risk management decisions?

3. If additional LOEs for PAH exposure were added to the assessment, what weights would the different LOEs have for assessing risk to fish from PAHs? Would empirical data take precedence over theoretical?

4. How strong is the link between olfactory effects on Chinook in laboratory studies and growth, survival, reproduction for adult Chinook in the field? Does the agency envision that olfactory effects would be expressed only in the ISA, or

would the effect affect the ability of the fish to navigate in areas upstream where the fish are no longer exposed to water or sediment of the ISA?

5. What is the intended use of the estimates of the adult sturgeon tissue chemistry concentrations? How will the relative contribution of chemicals from areas within and outside Portland Harbor be determined given the large home range of the sturgeon? The assessment of adult Chinook and lamprey will also require an assessment of relative contribution from the site.

6. Has a decision matrix been established to determine whether a specific BSAF has sufficient robustness to be used in the RI? How will multiple BSAFs (derived from in-situ versus laboratory studies) be evaluated and prioritized for use in RI?

7. EPA saw poor sediment/sculpin relationship for some chemicals; EPA is hoping for a better relationship in fall 2005 invertebrate data. For the AVS+SEM use, under what circumstances would one consider doing this type of detailed assessment for a harbor-wide RI. Would it be more appropriate for the RD/RA stage?

8. How will the proposed collection of sediment AVS+SEM data be used in the risk assessment? How will this data relate to the existing sediment database? This may only be important for areas where metals are expected to be a driving factor in determining sediment cleanup. Would EPA expect to use this method only at locations were covalent metals are likely to drive risk?

9. Would we consider other options (and for what purpose) for getting at bioavailability for benthic community?

10. If fish eggs were added as a data need, what would the collection of fish eggs entail and what remedial decision would it impact (and how)?

11. If fish eggs were collected, how would these data be used in the risk assessment, recognizing that TRVs are not available?

5. Human Health Risk Assessment

5.1 HHRA Approach

1. What compelling new information supports EPA's determination that untreated surface water from the Willamette River represents a potential future source of residential and/or industrial drinking water? The inclusion of the residential drinking water scenario for the Lower Willamette was not included in the original Human Health CSM or in the approved Programmatic Work Plan.

While conducting this assessment will not require additional data collection, what is the rationale for including this scenario now?

2. What compelling new information supports the addition of the bivalve ingestion pathway, the identification of which appears to be dependent on anecdotal information? The LWG has been prevented from conducting fish consumption studies to establish fish/shellfish ingestion parameters because the regulatory agencies did not want to rely on anecdotal information to frame the assessment of this pathway. What is the justification for this change in policy?

3. If consumption of bivalves is included in the HHRA, will the LWG have an opportunity to query the diver that was reported to have been collecting clams in the Study Area as well as the representative from DHS that reported transients clamming to specifically identify locations of these activities and gather additional information about consumption patterns?

4. If consumption of bivalves is included in the HHRA, how do we resolve the relative low mass of bivalves in the Study Area, as being determined during the current benthic tissue collection effort, with EPA's assumed ingestion rate of 18 g/day (which equates to more than 6500 grams per year for a single consumer)?

5. If consumption of bivalves is included in the HHRA, how would we use the results from this evaluation in establishing cleanup goals for the Site given the significant uncertainty associated with this scenario?

6. Is the EPA requesting that the bivalve and crayfish data be combined for the proposed ingestion rate for invertebrates or should bivalve and crayfish ingestion be evaluated separately?

7. If anecdotal information is used to justify inclusion of scenarios in the HHRA and additional anecdotal information is continuously being brought forward by the agency team, how do we determine when we can complete the HHRA?

8. If empirical data should trump anything modeled, as stated by a member of the EPA team, why would we use transition zone water or surface water data to model tissue data?

9. What is the basis for EPA's statement that screening of transition zone water concentrations against human health AWQC (based on 17.5 g/day) "may not adequately represent the loading of bioaccumulative contaminants into biota in these areas where contaminated groundwater is discharging; therefore, additional data (e.g., in situ bioaccumulation tests) may be needed for such compounds"? (The AWQC are highly conservative and protective for evaluating exposure to bioaccumulative compounds through consumption of aquatic and

benthic organisms and assume all bioaccumulation occurs from water→tissue uptake.)

10. In the final paragraph on page 26, what is the rationale for suggesting that alternative methods may be needed to assess risks from consumption of aquatic/benthic organisms in areas where clean groundwater is discharging through clean or contaminated sediment?

5.4 Data Gaps

1. For additional smallmouth bass samples near specific sources, is the objective to evaluate specific sources or something else? Given that the home range of smallmouth bass can be up to almost 7 miles and averages about 1 mile (see Table 2 in Appendix C of the Programmatic Work Plan), how could additional smallmouth bass tissue data be used to assess risks or evaluate sources on a scale smaller than the bass home range?

2. Dana DaVoli stated during the December 13 meeting that additional small mouth bass data off-shore of specific facilities may be needed to establish cleanup levels. Why are the existing tissue and sediment data, in combination with the food web model and other sediment-tissue relationships (e.g., BSAFs), insufficient for establishing cleanup levels?

3. Dana DaVoli also stated that additional fish tissue data is needed to support an evaluation of risks at the scale of individual sites or areas of potential concern. This deviates from the technical approach for fish tissue compositing for the HHRA established in the programmatic work plan. What is EPA's rationale for this change? Is this an RD/RA issue?

4. How important is it to pin down uncertainty in areas where risk to Human Health from eating fish is already established? How does it affect fish tissue data needs?

5. Why are the existing upstream and regional tissue data (LWG data, DEQ data, CRITFC data, etc.) not sufficient for the HHRA, as the HHRA will only include a discussion of the potential contribution of background to Site risks in accordance with OSWER guidance (2002)?

6. How will collection of additional tissue data with lower PAH detection limits impact our ability to calculate appropriate Exposure Point Concentrations as the previous tissue data will have different detection limits? Is there an option to keep these two datasets separate?

7. It was stated that even if the new tissue samples that includes analysis of the new analytes (PBDEs) indicate that there are levels of concern present for PBDEs, this would not lead to additional data collection efforts. If this is the case, what will EPA do with the results that indicate risks from PBDEs?

6. Modeling Needs

6.1 Contaminant Fate and Transport Modeling

1. What are EPA/team expectations from the Fate and Transport (FT) model? What specific physical and chemical processes will the proposed model be capable of simulating? What are the model's limitations?
2. How will the FT model described by the agencies be used to inform decisions in the FS? How much additional confidence and rigor will the FT model proposed by the agencies bring to the recontamination, MNR, and food web evaluations, if at all (in comparison to the evaluation approach described in the Programmatic Work Plan)?
3. What is the anticipated schedule for the modeling effort?
4. Does uncertainty in the model lead to a more detailed study effort, or to a management decision?
5. What are the data needs for the FT model, and how should the data be collected?
6. How will surface water and sediment trap sampling inform the FT model?
7. Can we run the model with the data we have now?
8. What model parameters need additional data collection, and which can be estimated from existing information?
9. Can EPA provide the specific model code(s) selected for use and rationale for this selection?
10. What is the status of model code development and proposed technical peer review process (if code is not "off-the-shelf" and peer-reviewed)?
11. What is the proposed approach for linking the FT model to the food web model in terms of actual code and specific methods?

6.2 Food Web Modeling

1. If we break the river into segments, will we need to rethink the use of one average concentration for the whole river? Clarification is needed on EPA's proposal to consider time spent in different river segments for modeling of large home range fish (as described in Figure 7 on the relationship of the river

segments for FT and Food Web (FW) model). This adjustment may not be feasible with the proposed Gobas type model.

2. If the primary goal of additional fish tissue sampling is to look at individuals (instead of composites), why is more sculpin data requested (since these will need to be composited)? Does EPA envision the need for additional sediment and or invertebrate sampling to account for other food web components?

3. What are advantages and disadvantages of predicting tissue recovery times using a linked FT and FW model, given the model uncertainties?

4. What is the technical rationale for the recommendation to use a simplified FW model encompassing representative pelagic and benthic species? (Using species groupings may further complicate model calibration because of life history differences, such as home range size.)

5. Bruce Hope stated on December 13 that the FW model would need to be simplified to link it to the FT model. What are these simplifications?